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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,130	10/31/2003	Lauren A. Groth	130290-01	2699
35684	7590	05/16/2007		
BUTZEL LONG 350 SOUTH MAIN STREET SUITE 300 ANN ARBOR, MI 48104			EXAMINER DANIELS, MATTHEW J	
			ART UNIT 1732	PAPER NUMBER
			MAIL DATE 05/16/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/699,130	Applicant(s) GROTH, LAUREN A.	
	Examiner Matthew J. Daniels	Art Unit 1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 January 2007.
 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7-10, 12-20, 22 and 23 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) ☐ Claim(s) 9, 10 and 12-20 is/are allowed.
 6) ☐ Claim(s) 1-5, 7, 8, 22 and 23 is/are rejected.
 7) ☐ Claim(s) _____ is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3 January 2007 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1-3, 8, and 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson (USPN 5285559). **As to Claim 1**, Thompson teaches a method of protecting electrical assemblies such as printed circuit boards comprising:

Providing a printed circuit board having an electrical assembly formed thereon, having two surfaces and a topography defined by its components (3:45-55, Fig. 3, item 38);

Providing a first molded form configured to cover the upper surface of the printed circuit board (28 and 32);

Providing a second molded form configured to cover the lower surface of the printed circuit board (30, 34, 40);

The first and second molded forms having reinforcement embedded therein (3:30-37, fibrous materials are reinforcing);

Securing the circuit board between the first and second molded forms so that the circuit board is enclosed between the first and second molded forms and so that the individual components have complementarily shaped recesses formed in the first molded form and the second molded form so as to protect from damage caused by vibration, shock, or thermal changes (Fig. 2, 4:31-33).

Thompson is silent to the particular order of steps, namely first molding the complementary shapes and then placing the printed circuit board into the molded complementary shapes. However, any order of performing process steps disclosed by the prior art is generally deemed to be prima facie obvious in the absence of unexpected results, and it would be desirable to rearrange the steps of Thompson in order to allow removal and repair. Furthermore, because Thompson suggests that the encapsulant (5:2) of silicon rubber (4:34) is easily removed (4:68) by peeling of the material (5:2) to allow rework (5:3), it is submitted that Thompson suggests reuse of the silicone rubber, and doing so would provide silicone rubber pieces having the same (complementary) shape as the printed circuit board that was used to shape them initially. Thus, in a first interpretation, it would have been obvious to shape the silicon rubber prior to assembling the article as a rearrangement of process steps. In a second interpretation, Thompson suggests reworking, which would provide the silicone rubber parts having the complementary shape formed initially in the material.

As to Claim 2, Thompson teaches various parts which are interpreted to be co-molded forms (Fig. 3, items 34 and 40, 30, and 26). **As to Claim 3**, Thompson teaches an outer surface portion that is reinforced with fiber or particulate (3:25-35) and an inner portion of silicon rubber which absorbs shock and vibration. Thus, it is submitted that the outer layer of Thompson is inherently harder than the central portion. **As to Claim 8**, the articles of Thompson could be used in “down hole” applications, and are therefore capable of fulfilling the intended use.

As to Claim 23, Thompson teaches a method of protecting electrical assemblies such as printed circuit boards comprising:

Providing an electrical assembly that includes electrical components assembled on a circuit board, the assembly having two surfaces and a topography defined by its components (3:45-55, Fig. 3, item 38);

Providing a first molded form configured to cover the upper surface of the printed circuit board (28 and 32);

Providing a second molded form configured to cover the lower surface of the printed circuit board (30, 34, 40);

Encasing the electrical assembly between the forms in a manner that allows it to be easily removed and replaced without damaging the electrical components and being capable of reuse (5:3, “rework”).

Thompson is silent to the particular order of steps, namely first molding the complementary shapes and then placing the printed circuit board into the molded complementary shapes. Instead, Thompson provides the two halves, and molds the complementary shapes using the printed circuit board (Figs.). However, any order of performing process steps disclosed by

the prior art is generally deemed to be prima facie obvious in the absence of unexpected results, and it would be desirable to rearrange the steps of Thompson in order to allow removal and repair. Furthermore, because Thompson suggests that the encapsulant (5:2) of silicon rubber (4:34) is easily removed (4:68) by peeling of the material (5:2) to allow rework (5:3), it is submitted that Thompson suggests reuse of the silicone rubber, and doing so would provide silicone rubber pieces having the same (complementary) shape as the printed circuit board that was used to shape them initially. Thus, in a first interpretation, it would have been obvious to shape the silicon rubber prior to assembling the article as a rearrangement of process steps. In a second interpretation, Thompson suggests reworking, which would provide the silicone rubber parts having the complementary shape formed initially in the material.

3. **Claim 4** is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson (USPN 5285559) in view of De Remer (USPN 3204385). Thompson teaches the subject matter of Claim 3 above under 35 USC 103(a). **As to Claim 4**, Thompson is silent to the claimed ridges. However, De Remer provides a similar cushioning structure comprising an outer case (Fig. 3, items 11, 15) and an inner cushioning case (foam) configured to the shape of the article (Figs. 8-9). De Remer further provides elements which are interpreted to be ridges (Fig. 3, item 15). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of De Remer into that of Thompson in order to (a) provide extra cushioning and (b) interlock and integrate the cushioning material with the case. **As to Claim 7**, Thompson teaches an embedded structure that comprises material which would produce rigidity (fibrous material, 3:32), or shield from heat (3:25-41).

4. **Claim 5** is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson (USPN 5285559) in view of Moster (USPN 6233155). Thompson teaches the subject matter of Claim 1 above under 35 USC 103(a). **As to Claim 5**, Thompson is silent to the hinge. However, Moster teaches, generally, that it is desirable to provide a encapsulating device for printed circuit boards (title) having a hinge (item 106 in the figures). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Moster into that of Thompson in order to provide an easy method for opening and closing the device of Thompson.

5. **Claim 22** is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson (USPN 5285559) in view of Varadan (USPN 5366664). Thompson teaches the subject matter of Claim 1 above under 35 USC 103(a). **As to Claim 22**, Thompson is silent to the reinforcing insert comprising scrim, an emi shield, or a heat sink. However, Varadan teaches that in providing covers for printed circuit boards (2:45-46, 7:10-17), it is known to provide at least conductive fibers (5:12, 4:28-35) or metallic copper flakes (4:52-58), which would provide the claimed shielding and heat sink effects. In certain embodiments, a scrim may also be used (9:27-28). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Varadan into that of Thompson because (a) Thompson suggests combinations of fibrous materials and particulates (3:30-35), which is exactly what is provided by Varadan (5:12-17), and (b) doing so would improve the strength and decrease the

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level of electromagnetic interference inside the cavity, a result which Varadan suggests as desirable for a variety of instruments (7:7-17).

Allowable Subject Matter

6. **Claims 9, 10, 12-20** are allowed.

7. The following is a statement of reasons for the indication of allowable subject matter:

The prior art does teach or fairly suggest the method claimed by amended Claim 9, in particular the steps of modifying an electronic image of the upper surface by adding a factor to or subtracting a factor from the measured heights of each of the individual components of the electrical assembly provided on a printed circuit board.

8. The closest prior art of record is Moster (USPN 6233155), but Moster does not provide any teaching or suggestion that the process contemplates an electronic image, modifying the image by a factor added to or subtracted from each of the individual components of the electrical assembly, and subsequently producing a mold from the electronic image.

9. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

10. Applicant's arguments with respect to claims 1 and 23 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J. Daniels whose telephone number is (571) 272-2450. The examiner can normally be reached on Monday - Friday, 8:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read 'Matthew J. Daniels', is positioned above the printed name.

Matthew J. Daniels

A.U. 1732

11 May 2007